

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A first-order modified, hydrogenated polymer (A-1) comprising:

(1) a hydrogenated polymer obtained by hydrogenating at least one unhydrogenated polymer selected from the group consisting of (1-A) a polymer comprising conjugated diene monomer units and (1-B) a copolymer comprising conjugated diene monomer units and vinyl aromatic hydrocarbon monomer units, said copolymer (1-B) having no or at least one polymer block (H) of said vinyl aromatic hydrocarbon monomer units, and

(2) a functional group-containing first-order modifier group bonded to said hydrogenated polymer (1), ~~wherein said functional group-containing first-order modifier group comprises at least one functional group selected from the group consisting of a hydroxyl group, an epoxy group, an amino group, a silanol group and an alkoxysilane group,~~

said first-order modified, hydrogenated polymer (A-1) having the following characteristics (i) to (iv):

(i) a content of said vinyl aromatic hydrocarbon monomer units of from 0 to 60 % by weight, based on the weight of said hydrogenated polymer,

(ii) a vinyl aromatic hydrocarbon block ratio of from 0 to less than 50 % by weight, wherein said vinyl aromatic hydrocarbon block ratio is defined as the percent by weight of the vinyl aromatic hydrocarbon monomer units contained in said at least one polymer

block (H) of said vinyl aromatic hydrocarbon monomer units, based on the total weight of vinyl aromatic hydrocarbon monomer units contained in said copolymer (1-B),

(iii) a weight average molecular weight of from 20,000 to 2,000,000, and

(iv) a hydrogenation ratio of more than 70 %, as measured with respect to the double bonds in said conjugated diene monomer units[[]].

wherein said functional group containing first-order modifier group (2) comprises at least one functional group represented by a formula selected from the group consisting of the following formulae (a) to (m):

wherein, in the formulae (a) to (m):

N represents a nitrogen atom, Si represents a silicon atom, O represents an oxygen atom, C represents a carbon atom, and H represents a hydrogen atom,

each of R¹ to R⁴ independently represents a hydrogen atom or a C₁-C₂₄ hydrocarbon group which optionally has at least one functional group selected from the group consisting of a hydroxyl group, an epoxy group, an amino group, a silanol group and a C₁-C₂₄ alkoxysilane group,

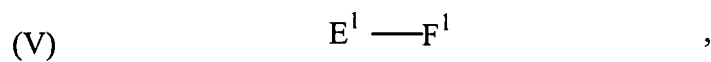
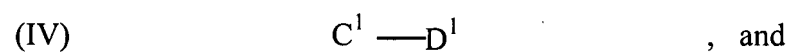
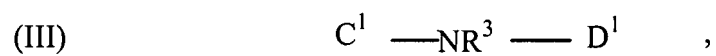
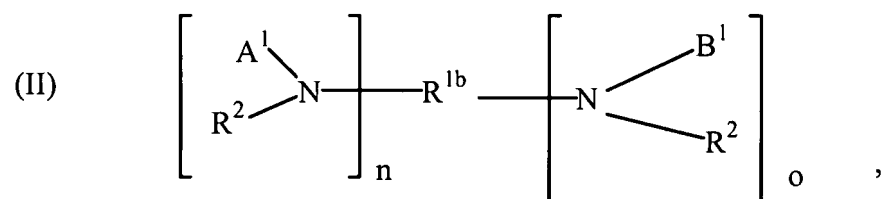
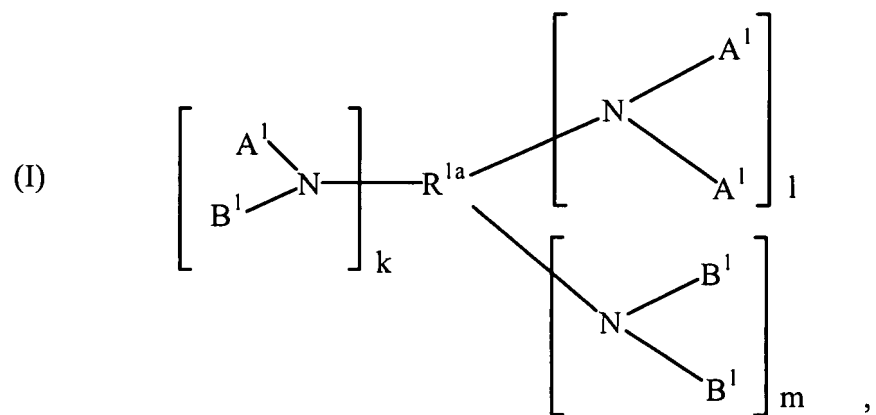
each R⁵ independently represents a C₁-C₄₈ hydrocarbon group and optionally, independently has at least one functional group selected from the group consisting of a hydroxyl group, an epoxy group, an amino group, a silanol group and a C₁-C₂₄ alkoxysilane group,

each R⁶ independently represents a hydrogen atom or a C₁-C₈ alkyl group,

wherein each of R¹ to R⁵ optionally, independently has bonded thereto at least one atom selected from the group consisting of an oxygen atom, a nitrogen atom, a sulfur atom and a silicon atom, said at least one atom being present in a linkage other than a hydroxyl group, an epoxy group, an amino group, a silanol group and an alkoxysilane group.

2. (Cancelled).

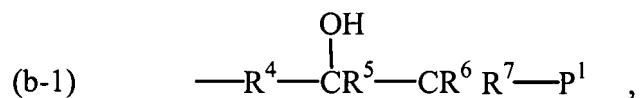
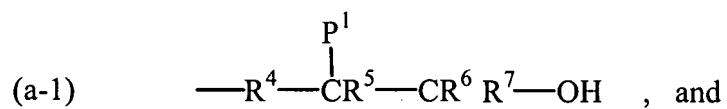
3. (Currently amended) The first-order modified, hydrogenated polymer (A-1) according to claim 1 ~~[[or 2]]~~, which is represented by a ~~polymer~~ formula selected from the group consisting of the following formulae (I) to (V):



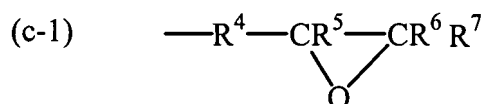
wherein:

A^1 represents a unit which is represented by any one of the following formulae

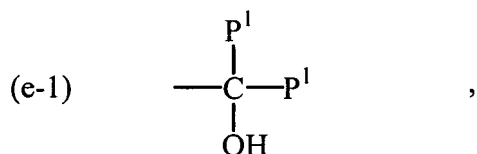
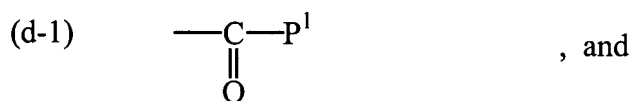
(a-1) and (b-1):



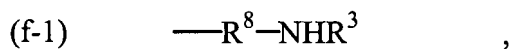
B¹ represents a unit which is represented by the following formula (c-1):



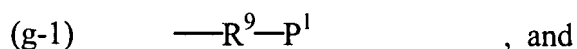
C¹ represents a unit which is represented by any one of the following formulae (d-1) and (e-1):



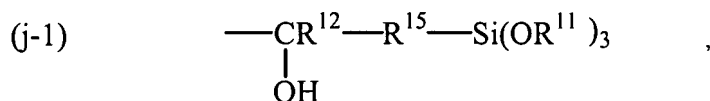
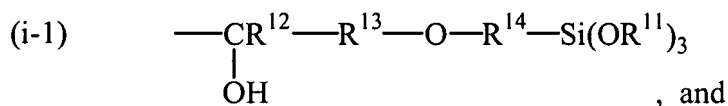
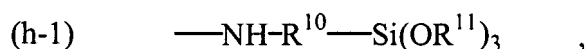
D¹ represents a unit which is represented by the following formula (f-1):



E¹ represents a unit which is represented by the following formula (g-1):



F¹ represents a unit which is represented by any one of the following formulae (h-1) to (j-1):



wherein, in the formulae (I) to (III) and (a-1) to (j-1):

N represents a nitrogen atom, Si represents a silicon atom, O represents an oxygen atom, C represents a carbon atom, and H represents a hydrogen atom,

P¹ represents said hydrogenated polymer (1),

R^{1a} represents a trivalent aliphatic C₁-C₄₈ hydrocarbon group,

each of R^{1b}, R⁴, R⁸ to R¹⁰ and R¹³ to R¹⁵ independently represents a C₁-C₄₈ alkylene group,

each of R², R³ and R¹¹ independently represents a C₁-C₄₈ alkyl group, a C₆-C₄₈ aryl group, an alkylaryl group comprised of C₁-C₄₈ alkyl and C₆-C₄₈ aryl, an aralkyl group comprised of C₁-C₄₈ alkyl and C₆-C₄₈ aryl, or a C₃-C₄₈ cycloalkyl group,

wherein each of R^{1a} , R^{1b} , R^3 , R^4 , R^8 to R^{10} and R^{13} to R^{15} optionally, independently has at least one functional group selected from the group consisting of a hydroxyl group, an epoxy group, an amino group, a silanol group and a C_1 - C_{24} alkoxysilane group,

each of R^5 to R^7 and R^{12} independently represents a hydrogen atom, a C_1 - C_{48} alkyl group, a C_6 - C_{48} aryl group, an alkylaryl group comprised of C_1 - C_{48} alkyl and C_6 - C_{48} aryl, an aralkyl group comprised of C_1 - C_{48} alkyl and C_6 - C_{48} aryl, or a C_3 - C_{48} cycloalkyl group,

wherein each of R^{1a} , R^{1b} , R^2 to R^4 and R^8 to R^{15} optionally, independently has bonded thereto at least one atom selected from the group consisting of an oxygen atom, a nitrogen atom, a sulfur atom and a silicon atom, said at least one atom being present in a linkage other than a hydroxyl group, an epoxy group, an amino group, a silanol group and an alkoxysilane group, and

each of k, l, m and o is independently an integer of 0 or more, provided that both k and l are not simultaneously 0, and n is an integer of 1 or more.

4. (Currently amended) A filler-containing modified polymer composition comprising:

100 parts by weight of ~~(A-1)~~ the first-order modified, hydrogenated polymer (A-1) of claim 1, and

0.5 to 300 parts by weight of (B) a reinforcing filler.

5. (Original) The filler-containing modified polymer composition according to claim 4, which further comprises 0.01 to 20 parts by weight of (C) a second-order modifier having a functional group which is reactive to said functional group of said modifier group of said first-order modified, hydrogenated polymer (A-1), wherein said second-order modifier (C) is at least one member selected from the group consisting of a functional monomer and a functional oligomer.

6. (Original) The filler-containing modified polymer composition according to claim 4 or 5, wherein said reinforcing filler (B) is at least one member selected from the group consisting of a silica inorganic filler, a metal oxide, a metal hydroxide and carbon.

7. (Previously amended) A crosslinked, filler-containing modified polymer composition obtained by subjecting the filler-containing modified polymer composition of claim 4 or 5 to a crosslinking reaction in the presence of a vulcanizing agent.

8. (Currently amended) A modified polymer composition comprising:
1 to 99 parts by weight, relative to 100 parts by weight of the total of components (A-1) and (D), of ~~(A-4)~~ the first-order modified, hydrogenated polymer (A-1) of claim 1, and

99 to 1 part by weight, relative to 100 parts by weight of the total of components (A-1) and (D), of (D), which is at least one polymer selected from the group consisting of

a thermoplastic resin other than said first-order modified, hydrogenated polymer (A-1) and a rubbery polymer other than said first-order modified, hydrogenated polymer (A-1).

9. (Original) The modified polymer composition according to claim 8, which further comprises 0.01 to 20 parts by weight, relative to 100 parts by weight of the total of components (A-1) and (D), of (C) a second-order modifier having a functional group which is reactive to said functional group of said modifier group of said first-order modified, hydrogenated polymer (A-1), wherein said second-order modifier (C) is at least one member selected from the group consisting of a functional monomer and a functional oligomer.

10. (Original) The modified polymer composition according to claim 8 or 9, wherein said rubbery polymer in component (D) comprises at least one member selected from the group consisting of a conjugated diene polymer comprising conjugated diene monomer units, a random copolymer comprising conjugated diene monomer units and vinyl aromatic hydrocarbon monomer units, a block copolymer comprising conjugated diene monomer units and vinyl aromatic hydrocarbon monomer units, a non-diene polymer and a natural rubber, said rubbery polymer being unhydrogenated or at least partially hydrogenated.

11. (Previously presented) The modified polymer composition according to claim 8 or 9, wherein said thermoplastic resin in component (D) is a functional group-containing thermoplastic resin and said rubbery polymer in component (D) is a

functional group-containing rubbery polymer, wherein each of said functional group-containing thermoplastic resin and rubbery polymer contains at least one functional group which is reactive to said functional group of said first-order modifier group of said first-order modified, hydrogenated polymer (A-1).

12. (Currently amended) The modified polymer composition according to claim 11, wherein said functional group-containing thermoplastic resin ~~comprises~~ is at least one member selected from the group consisting of a polyester resin, a polyamide resin, a polycarbonate resin, a polyurethane resin, a polyphenylene ether resin and a polyoxymethylene resin each of which contains at least one functional group selected from the group consisting of an acid anhydride group, a carboxyl group, a hydroxyl group, an epoxy group, an amino group, a silanol group and an alkoxysilane group.

13. (Currently amended) An adhesive composition comprising:
100 parts by weight of ~~(A-1)~~ the first-order modified, hydrogenated polymer (A-1) of claim 1, and
20 to 400 parts by weight of (E) a tackifier.

14. (Original) The adhesive composition according to claim 13, which further comprises 0.01 to 20 parts by weight of (C) a second-order modifier having a functional group which is reactive to said functional group of said modifier group of said first-order modified, hydrogenated polymer (A-1), wherein said second-order modifier

(C) is at least one member selected from the group consisting of a functional monomer and a functional oligomer.

15. (Currently amended) An asphalt composition comprising:
0.5 to 50 parts by weight of ~~(A-4)~~ the first-order modified, hydrogenated polymer (A-1) of claim 1, and
100 parts by weight of (F) an asphalt.

16. (Original) The asphalt composition according to claim 15, which further comprises 0.01 to 20 parts by weight of (C) a second-order modifier having a functional group which is reactive to said functional group of said modifier group of said first-order modified, hydrogenated polymer (A-1), wherein said second-order modifier (C) is at least one member selected from the group consisting of a functional monomer and a functional oligomer.

17. (Currently amended) A styrene resin composition obtained by subjecting a raw material mixture to radical polymerization, said raw material mixture comprising:

2 to 30 parts by weight, relative to 100 parts by weight of the total of components (A-1) and (G), of ~~(A-4)~~ the first-order modified, hydrogenated polymer (A-1) of claim 1, and

98 to 70 parts by weight, relative to 100 parts by weight of the total of components (A-1) and (G), of (G), which is a vinyl aromatic hydrocarbon monomer or a

mixture of a vinyl aromatic hydrocarbon monomer and a comonomer copolymerizable with said vinyl aromatic hydrocarbon monomer.

18. (Original) The styrene resin composition according to claim 17. wherein said raw material mixture further comprises 0.01 to 20 parts by weight, relative to 100 parts by weight of the total of components (A-1) and (G), of (C) a second-order modifier having a functional group which is reactive to said functional group of said modifier group of said first-order modified, hydrogenated polymer (A-1), wherein said second-order modifier (C) is at least one member selected from the group consisting of a functional monomer and a functional oligomer.

19. (Currently amended) A method for producing the styrene resin composition of claim 17 ~~or 18~~, comprising:

(1) providing a raw material mixture comprising ~~(A-1)~~ the first-order modified, hydrogenated polymer (A-1) of claim 1, (G) a vinyl aromatic hydrocarbon monomer or a mixture of a vinyl aromatic hydrocarbon monomer and a comonomer copolymerizable with said vinyl aromatic hydrocarbon monomer, and optionally at least one member selected from the group consisting of (C) a second-order modifier having a functional group which is reactive to said functional group of said modifier group of said first-order modified, hydrogenated polymer (A-1), wherein said second-order modifier (C) is at least one member selected from the group consisting of a functional monomer and a functional oligomer, and (B) a reinforcing filler, and

(2) subjecting said raw material mixture to radical polymerization,
thereby obtaining a styrene resin composition.

20-46. (Cancelled).